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(पहला पुनरीक्षण)

Indian Standard

TEXTILE MACHINERY — GLOSSARY OF TERMS RELATING TO DRAFTING IN SPINNING MACHINERY

(*First Revision*)

ICS 01.040.59;59.120.10

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

March 2003 **Price Group 5**

Spinning Preparatory, Spinning and Doubling (Twisting) Machinery Sectional Committee, TX 15

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Spinning Preparatory, Spinning and Doubling (Twisting) Machinery Sectional Committee had been approved by the Textile Division Council.

This standard was first published in 1967 with the intention of eliminating ambiguity and confusion arising from local interpretations of terms relating to drafting in spinning machinery.

In this standard, the latest developments in drafting system have been incorporated to bring it in line with the latest spinning system prevailing in the industry. Considerable assistance has been derived from ISO 2205:1975 'Textile machinery and accessories — Drafting arrangements for spinning machines — Terminology' issued by the International Organization for Standardization (ISO).

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

Indian Standard

TEXTILE MACHINERY — GLOSSARY OF TERMS RELATING TO DRAFTING IN SPINNING MACHINERY

(First Revision)

1 SCOPE

1.1 This standard prescribes definitions of terms relating to drafting in spinning machinery.

1.1.1 For the purpose of this standard, the definitions relating to drafting have been given under the following six groups:

- a) Drafting system,
- b) Numbering of the drafting rollers,
- c) Pressure devices for the drafting system,
- d) Individual parts of drafting system,
- e) Length of drafting zone, and
- f) Types of drafting systems.

2 DEFINITIONS

2.1 Drafting System — Part of the spinning machinery for drafting a sliver or roving made out of natural or man-made fibres or a blend of natural/man-made fibres, with or without twist between several pairs of rollers rotating at successively increasing circumferential speeds.

2.1.1 *Draft* — Ratio of surface speed of delivery rollers to the surface speed of feed rollers.

2.2 Numbering of the Drafting Rollers

- a) The rollers of a drafting system shall be numbered in the direction opposite to the movement of the fibres (with the observer in front of the drafting rollers), first being the front roller (or delivery roller), then second, third and fourth. The last drafting roller is considered as the back roller (or feed roller).
- b) All the bottom rollers shall be designated with Roman numerals, such as I, II, III, IV.
- c) All the top rollers shall be designated by Hindu-Arabic numerals, such as 1, 2, 3, 4. In the designation of slipdraft roller, there should be an additional, small letter, such as a, b, c, after the numeral designation (for example, 2a).
- d) The drafting system should always be represented in such a way that the sliver or rove of fibres is fed from the right.

2.3 Pressure Devices for the Drafting System

2.3.1 *Pressure by Counter Weight*

2.3.2 *Pressure by Springs*

2.3.3 *Pneumatic Pressure*

2.3.4 *Hydraulic Pressure*

2.3.5 *Magnetic Pressure*

2.3.6 *Load on the Top Rollers* — Load exerted on top roller (single or double boss) in kg.

2.3.7 *Line of Pressure* — Line of contact on which the pressure acts.

2.4 Individual Parts of Drafting System

2.4.1 *See* Fig. 1 and Fig. 2.

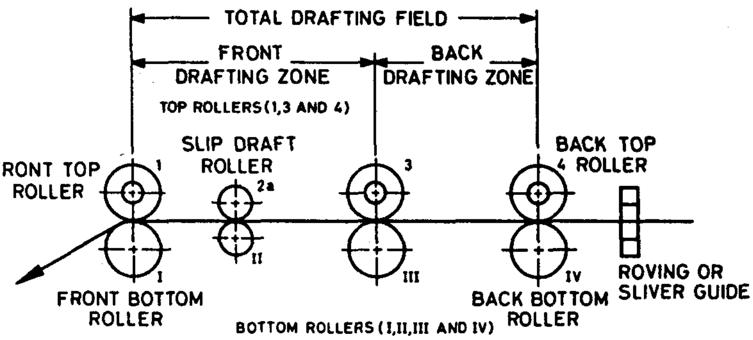

FIG. 1 TYPICAL 4-ROLLER DRAFTING SYSTEM

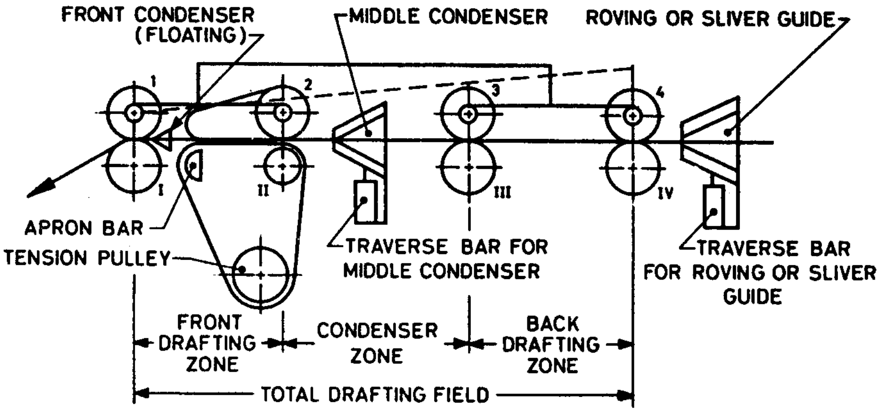

Fig. 2 Typical 4-Roller, Double-Apron, 2-Zone Drafting System

2.4.2 *Bottom Rollers* — Fluted or knurled rollers, controlled and generally coupled together by screw threads over the whole length of the machine and positively driven.

2.4.2.1 *Front* (*or delivery*) *bottom roller* — Bottom roller situated at the delivery of the drafting.

2.4.2.2 *Intermediate bottom roller* — Bottom roller situated between the front and the back bottom rollers.

2.4.2.3 *Back* (*or feed*) *bottom roller* — Bottom roller over which the roving or sliver enters the drafting.

2.4.3 *Top Rollers* — Rollers placed on top of the bottom rollers, which grip the roving or sliver by pressure and guide it towards the front roller.

2.4.3.1 *Front* (*or delivery*) *top roller* — Top roller situated at the delivery of the drafting.

2.4.3.2 *Intermediate top roller* — Top roller placed between the front and back top rollers.

2.4.3.3 *Slip draft roller* — Top roller, whose weight is such that the fibres can slip one beside the other.

2.4.3.4 *Back* (*or feed*) *top roller* — Top roller under which the roving or sliver enters the drafting.

2.4.4 *Types of Top Rollers* (*Single Boss or Twin Boss*)

2.4.4.1 *Fixed-boss top roller* — The top roller in which the boss is fixed with respect to the axis of the roller.

2.4.4.2 *Loose-boss top roller* — The roller in which the boss can rotate independently about the axis of the arbour and of one of the following two types:

a) With removable boss, and

b) With non-removable boss.

2.4.4.3 *Recessed top roller* — Top roller with recess to draft fibres lengths greater than the individual drafting zones (*see* Fig. 3).

2.4.5 *Guiding of Top Rollers* — The top rollers are held and guided either laterally or by the central arm. For central suspended top rollers, the top arm not only acts as a support but also as a lever for imparting the pressure. The top roller saddles can either be fixed or adjustable (*see* Fig. 4 and Fig. 5).

2.4.6 *Traverse Bar* — Bar with holes or condensers for guiding the roving or sliver fed and imparting a reciprocating movement.

2.4.7 *Cradle* — In case of apron drafting systems cradles are employed for guiding the top and bottom aprons (*see* Fig. 6).

2.5 Length of Drafting Zone — The distance between the pressure points of any two adjacent pairs of rollers, which have different delivery, speeds.

2.5.1 *Total Drafting Field* — The distance between the feed and delivery points of the drafting system.

2.6 Types of Drafting Systems — The various systems are here represented horizontally; positions other than horizontal are possible in the actual machine. The drafting system may be inclined to the horizontal.

2.6.1 2-*Roller Drafting* — The 2 top rollers exert pressure (*see* Fig. 7).

2.6.2 3-*Roller Drafting* — The 3 top rollers exert pressure (*see* Fig. 8).

2.6.3 4-*Roller Drafting* — The 4 top rollers exert pressure (*see* Fig. 9).

2.6.4 4 *Roller, 2-Zone Drafting* — *See* Fig. 10.

2.6.5 *Multiple-Zone Drafting* — Drafting system containing several drafting zones one after the other (*see* Fig. 11).

2.6.6 3-*Roller Drafting with a Slip Draft Roller* — System of drafting with 3 rows of rollers having a slip draft roller 2a on the intermediate bottom roller II (*see* Fig. 12).

2.6.7 5-*Roller Drafting with Slip Draft Rollers* — The front and back rollers are provided with top rollers exerting pressure; but other three intermediate rollers are slip draft rollers (*see* Fig. 13).

2.6.8 *Double Pressure-Point Drafting Called* 3 *on* 4 — Drafting system in which the 2 intermediate bottom rollers are provided with only one top roller exerting pressure (*see* Fig. 14).

2.6.9 2-*Double Pressure-Point Drafting* — Drafting system which has one front and one back roller with top roller in addition to the lower intermediate rollers, of which each pair of bottom rollers has only one top roller (*see* Fig. 15).

2.6.10 3-*Roller Single-Apron Drafting* — Drafting with 3 pairs of rollers with a long bottom apron round bottom roller II, apron bar and a tension pulley or spring-loaded cradle (*see* Fig. 16).

2.6.11 4-*Roller, Single-Apron Drafting* — An alternative to **2.6.10** but with 4 rows of rollers (*see* Fig. 17).

2.6.12 4-*Roller, Single-Apron Drafting with Several Slip Draft Rollers* — Drafting with 5 top rollers, 4 bottom rollers and long bottom apron passing over two intermediate bottom rollers and a tension pulley or cradle and three intermediate slip draft rollers (*see* Fig. 18).

2.6.13 4-*Roller, Double-Apron Drafting* — Drafting with 4 rows of rollers having top apron guided by 2 intermediate top rollers and long bottom apron passing over 2 intermediate bottom rollers and a tension pulley or cradle (*see* Fig. 19).

2.6.14 *Short Double-Apron Drafting* — Drafting with 3 rows of rollers having short top and bottom aprons passing over the middle row of rollers and 2 tensors or 1 double tensor (*see* Fig. 20).

2.6.15 *Double-Apron,* 2-*Roller Drafting (Drafting in One Zone)* — Drafting with 2 rows of rollers having top apron passing over back top roller and long bottom apron passing over back bottom roller, apron bar and a tension pulley or cradle (*see* Fig. 21).

2.6.16 *Double-Apron Drafting (Short Top Apron and Long Bottom Apron)* — Drafting with 3 rows of rollers and top apron passing over top roller 2 and long bottom apron passing over bottom roller II, apron bar and a tension pulley or cradle (*see* Fig. 22).

2.6.17 *Double-Apron,* 4-*Roller Drafting* — Drafting with 4 rows of rollers and top apron passing over top roller 2 and long bottom apron passing over bottom roller II, apron bar and a tension pulley or cradle (*see* Fig. 23).

2.6.18 *Double-Apron,* 5-*Roller Drafting* — Drafting with 5 rows of rollers and top apron passing over top roller 2 and long bottom apron passing over bottom roller II, apron bar and a tension pulley or cradle (*see* Fig. 24).

2.6.19 5-*Roller,* 2 *Double-Apron Drafting* — Drafting with 5 rows of rollers having two top aprons passing separately over intermediate top rollers 2 and 4 and two long bottom aprons passing separately over intermediate bottom rollers II and IV, apron bar and tension pulleys or cradles (*see* Fig. 25).

2.6.20 4-*Roller,* 2 *Double-Apron Drafting* — Drafting with 4 rows of rollers having two top aprons passing separately. Intermediate top rollers 2 and 4 and two long bottom aprons passing separately over intermediate bottom rollers II and IV, apron bar and tension pulleys or cradles (*see* Fig. 26).

2.6.21 *Rotating Funnel Drafting* — The arrangement contains a feed roller and a drafting roller over both of which there are top rollers; between the two there is a rotating funnel and a guide plate (*see* Fig. 27).

2.6.22 *Gill Pins Drafting* — There are 3 rows of rollers with slip draft roller and needle shaped gill pins situated between the front rollers and the intermediate rollers (*see* Fig. 28).

2.6.23 *Intersecting Gill Pins Drafting* — There are 3 rows of rollers with slip draft rollers in the middle; the double set of needle like gill pins are situated between the front and intermediate rollers (*see* Fig. 29).

2.6.24 3 *Over* 4 *Drafting System* — The middle top pressure roller is supported on two bottom rollers. The two bottom rollers are carried in a common cradle and are not adjustable relative to each other. Pressure bar also helps in better fibre control (*see* Fig. 30).

2.6.25 4 *Over* 3 *Drafting System* — The 4th roller added to the 3 roller system, has somewhat lower loading. It acts as a guide to the delivery roller directing the web in a curve around the groove roller (*see* Fig. 31).

2.6.26 5 *Over* 4 *Drafting System* — Five rollers rest on two large and two small non-adjustable bottom rollers. The pressure rollers are suspended from two yokes. Drafting is carried out in field B (Break draft) and in field A (Main draft). In the main drafting field, a pressure bar ensures firm guidance particularly for short fibres. The drafting arrangement is aligned on a curve resulting in the flow of material from the vertical plane into a horizontal (*see* Fig. 32).

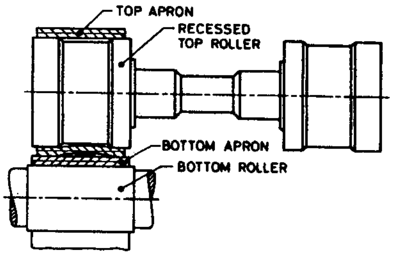

FIG. 3 RECESSED TOP ROLLER

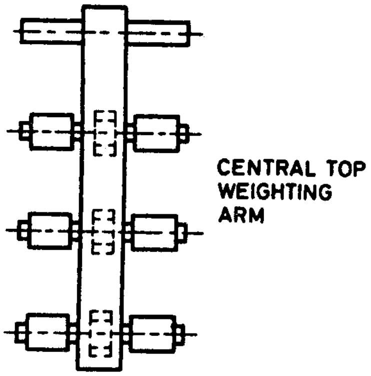

FIG. 4 CENTRAL GUIDE

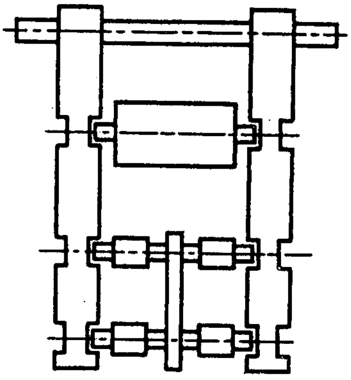

FIG. 5 LATERAL GUIDE

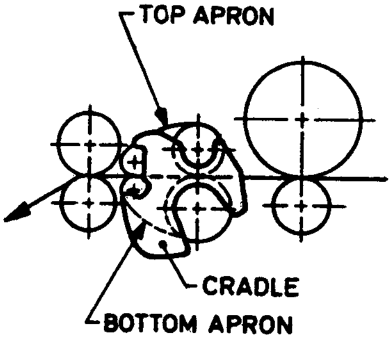

FIG. 6 CRADLE

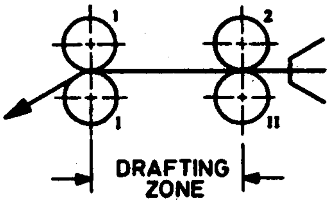

FIG. 7 2-ROLLER DRAFTING

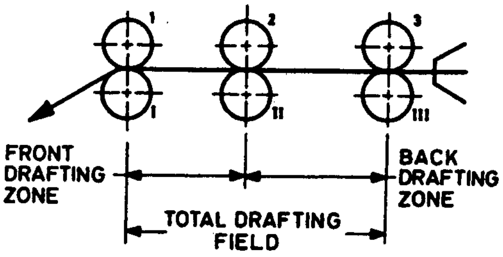

FIG. 8 3-ROLLER DRAFTING

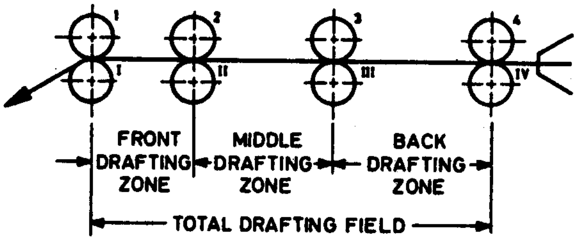

FIG. 9 4-ROLLER DRAFTING

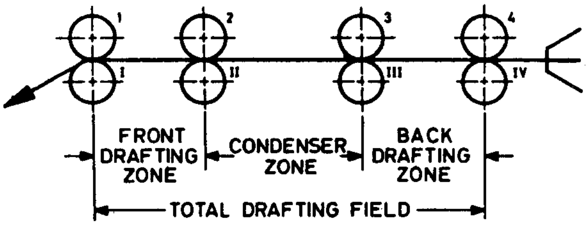

Fig. 10 4-Roller, 2-Zone Drafting

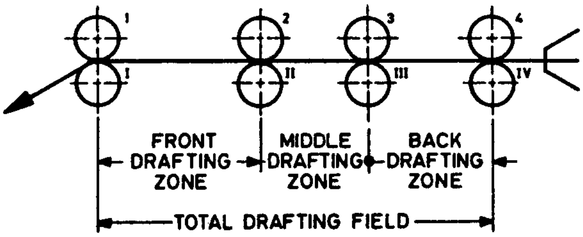

Fig. 11 Multiple-Zone Drafting

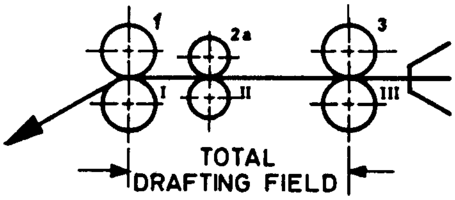

Fig. 12 3-Roller Drafting with a Slip Draft Roller

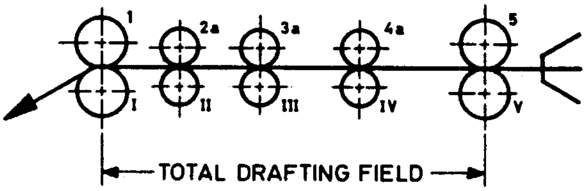

Fig. 13 5-Roller Drafting with a Slip Draft Roller

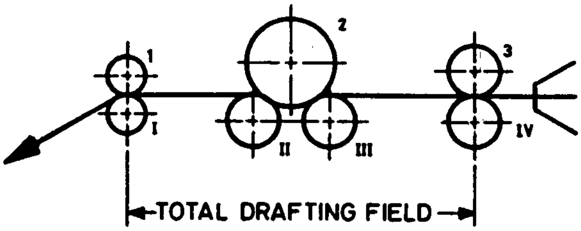

Fig. 14 Double Pressure-Point Drafting

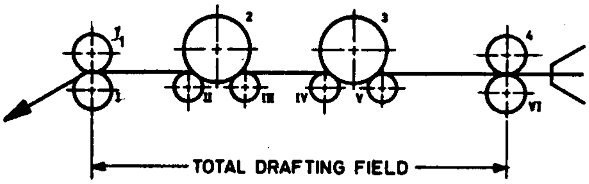

Fig. 15 2-Double Pressure-Point Drafting

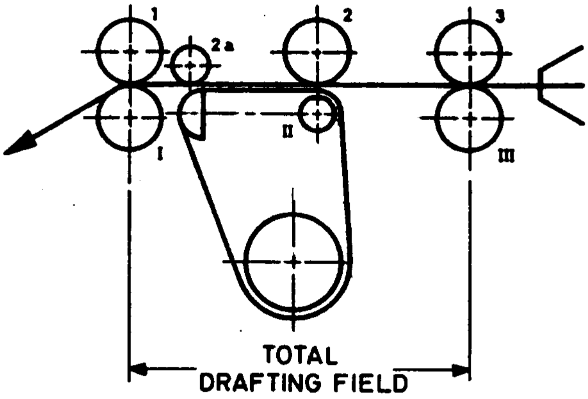

Fig. 16 3-Roller, Single-Apron Drafting

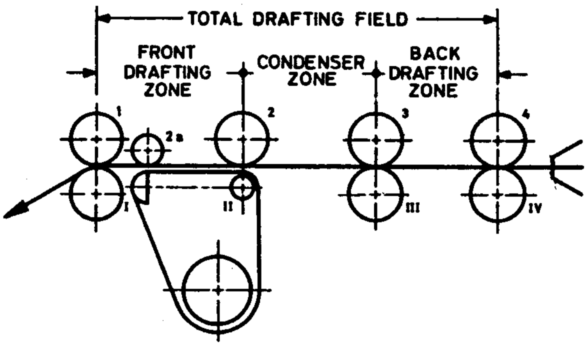

Fig. 17 4-Roller, Single-Apron Drafting

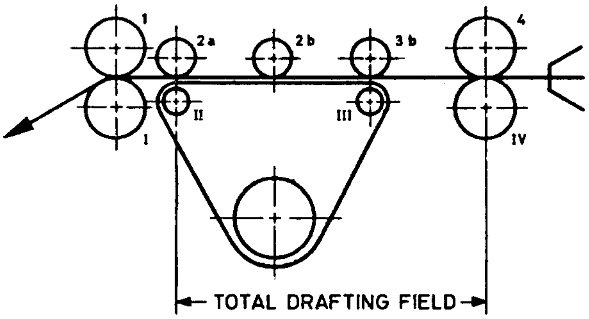

Fig. 18 4-Roller, Single-Apron Drafting with Several Slip Draft Rollers

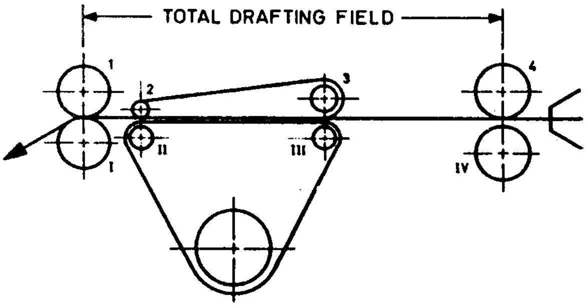

Fig. 19 4-Roller, Double-Apron Drafting

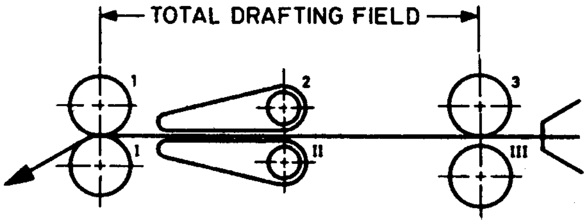

Fig. 20 Short Double-Apron Drafting

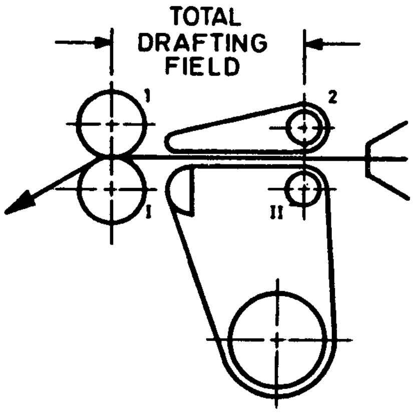

Fig. 21 Double-Apron, 2-Roller Drafting

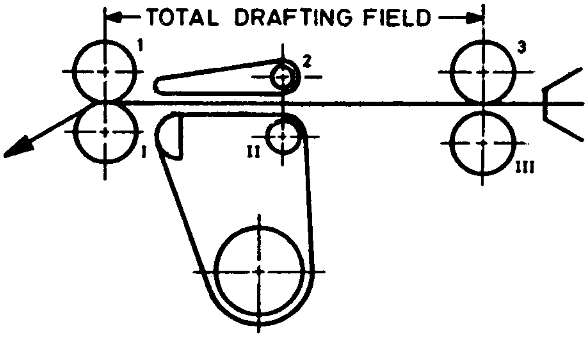

Fig. 22 Double-Apron Drafting

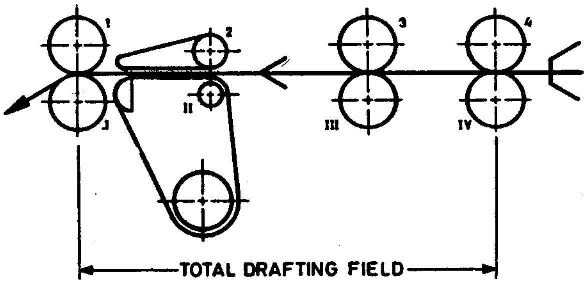

Fig. 23 Double-Apron, 4-Roller Drafting

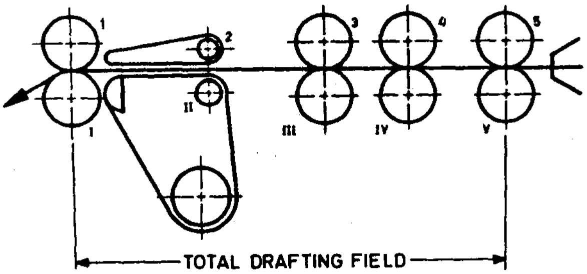

FIG. 24 DOUBLE-APRON, 5-ROLLER DRAFTING

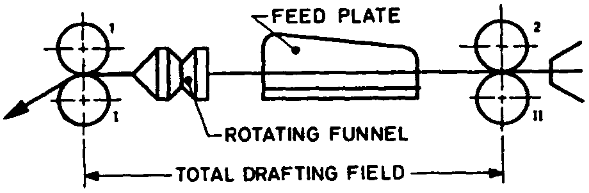

FIG. 27 ROTATING FUNNEL DRAFTING

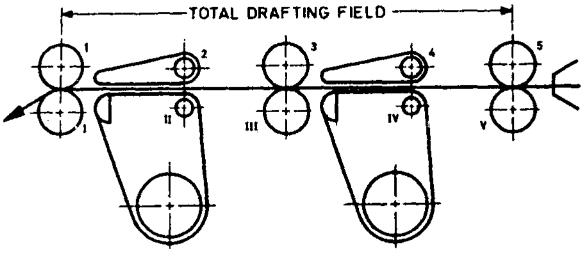

FIG. 25 5-ROLLER, 2 DOUBLE-APRON DRAFTING

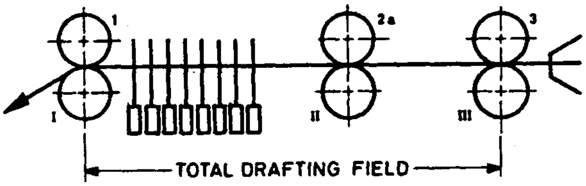

FIG. 28 GILL PINS DRAFTING

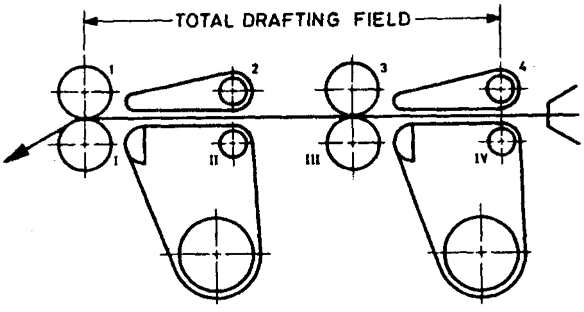

FIG. 26 4-ROLLER, 2 DOUBLE-APRON DRAFTING

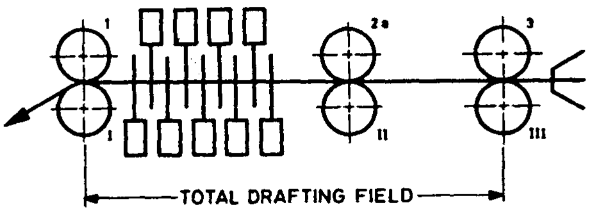

FIG. 29 INTERSECTING GILL PINS DRAFTING

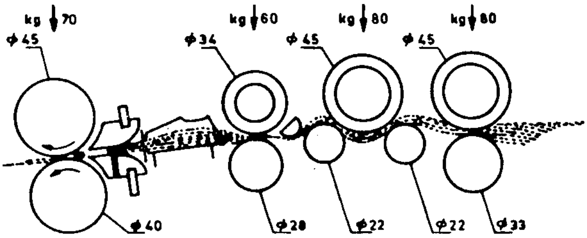

FIG. 30 3 OVER 4 DRAFTING

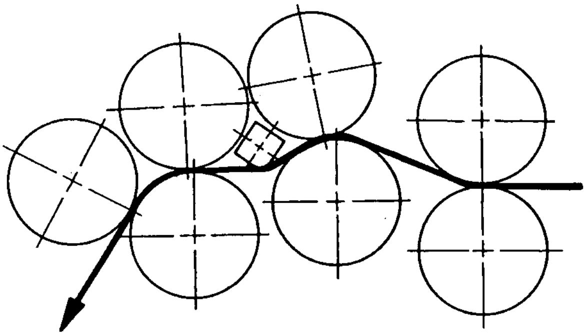

FIG. 31 4 OVER 3 DRAFTING

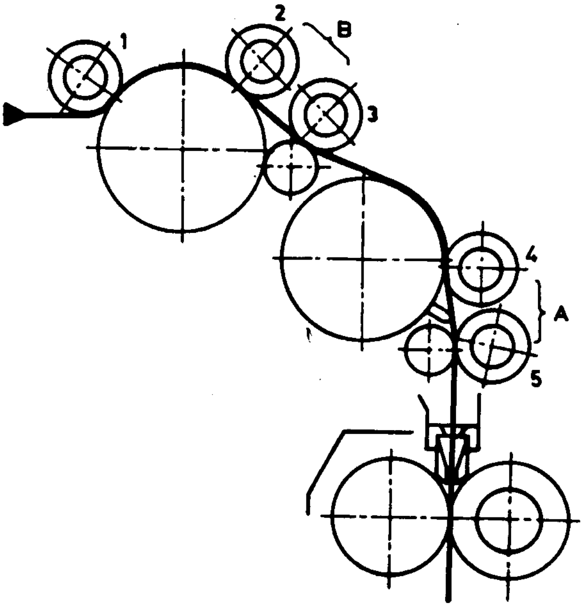

FIG. 32 5 OVER 4 DRAFTING

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Spinning Preparatory, Spinning and Doubling (Twisting) Machinery Sectional Committee, TX 15

Organization	*Representative(s)*
Lakshmi Machine Works Ltd, Coimbatore	Shri K. B. Krishnan (***Chairman***)
Ahmedabad Textile Industry's Research Association, Ahmedabad	Shri A. K. Agrawal
Ahmedabad Textile Mills Association, Ahmedabad	Shri G. B. Patil
Association of Merchants & Manufacturers of Textile Stores & Machinery, Mumbai	Shri G. T. Dembla
	Shri J. K. Bajaj (*Alternate*)
Barmag India Pvt Ltd, Mumbai	Shri K. M. Thanawalla
	Shri S. K. Mukhopadhyay (*Alternate*)
Cassa Group, Ahmedabad	Shri Madan Saluja
Century Textiles & Industries Ltd, Mumbai	Shri P. M. Nevatia
	Shri V. Ramachandran (*Alternate*)
Central Institute for Research on Cotton Technology, Mumbai	Dr S. K. Chattopadhyay
	Shri Muntazir Ahmed (*Alternate*)
Indian Institute of Technology, Delhi	Prof S. M. Ishtiaque
	Prof R. Chattopadhyay (*Alternate*)
Kunal Engineering Co Ltd, Chennai	Shri S. Kandavel
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Lohia Machinery Manufacturers, Kanpur	Shri S. C. Sachan
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Man-Made Textiles Research Association, Surat	Dr T. V. K. Srivastava
	Shri H. U. Bhonde (*Alternate*)
New Standard Engineering Co Ltd, New Delhi	Shri M. S. Anand
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Office of the Textile Commissioner, Mumbai	Shri S. P. Ghosh
	Shri S. Chakrabarty (*Alternate*)
Padmatex Engineering Ltd, Mumbai	Shri A. K. Kalyanraman
Synthetic and Art Silk Mills' Association Ltd, Mumbai	Shri V. S. Chalke
Textiles Committee, Mumbai	Shri D. P. Jadeja
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The Arvind Mills Ltd, Ahmedabad	Shri A. W. Qureshi
The Bombay Dyeing & Manufacturing Co Ltd, Mumbai	Shri T. Narayanan
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	Shri P. D. Naterwalla (*Alternate*)
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